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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/928,172 | 08/09/2001 | Chris Parfeniuk | HO57-235 | 6785 |

21567 7590 09/04/2003
WELLS ST. JOHN P.S.
601 W. FIRST AVENUE, SUITE 1300
SPOKANE, WA 99201

EXAMINER

BREWSTER, WILLIAM M

ART UNIT PAPER NUMBER

2823

DATE MAILED: 09/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/928,172

Applicant(s)

PARFENIUK ET AL.

Examiner

William M. Brewster

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 38-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 38-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s). <u>10</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>9</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 38-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt et al., U.S. Patent No. 5,836,506, in view of Dunlop et al., U.S. Patent No. 5,590,389.

Hunt (506) teaches, in fig. 5, a physical vapor deposition target 10 construction comprising: a physical vapor deposition target 16 consisting essentially of high purity aluminum material, col. 4, lines 16 - 24, and diffusion bonded, col. 6, line 59 - col. 7, line 31, to an aluminum-containing backing plate, col. 4, lines 24 - 36.

Hunt (506) does not specify the grain diameter of the aluminum target material, but Dunlop does specify this. Dunlop teaches in figs. 6, 7, and 8, a target material made of aluminum 60, col.7, line 3 - col. 8, line 30, and wherein a predominate portion and all of the grains in the target material are: less than 100 μms in maximum dimension, less than or equal to about 50 μms , approximately 1 μm , col. 8, lines 3-10. Dunlop gives motivation in col. 1, lines 13 - 25. Even with diffusion bonding, examiner reasonably believes that the Al target maximum dimension of the grain size would be less than or equal to about 50 μms in diameter. It would have been obvious to a person

of ordinary skill in the art at the time the invention was made to recognize that combining Dunlop's process with Hunt (506)'s invention would have been beneficial because it helps produce sputtering with improved manufacturing costs and improves uniformity and deposition rate.

Claims 44-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt in view of Dunlop as applied to claims 38-43 above, and further in view of Hunt, U.S. Patent No. 6,073,830.

Hunt (506) and Dunlop do not specify the type of aluminum composing their backing plate, but Hunt (830) does. Hunt (830) teaches in fig. 2, a physical vapor deposition target 10, with backing plate 17, comprises a material selected from the group consisting of 2000 Series aluminum, 5000 Series aluminum, 6000 Series aluminum, and 7000 Series aluminum, a 6061 aluminum alloy, col. 9, lines 15 - 24. Hunt (830) gives motivation in col. 3, lines 34-63. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that combining Hunt (830)'s process with Hunt (506) and Dunlop's invention would have been beneficial because it is more cost effective to provide a two piece construction with a backing plate made from a less expensive material.

Neither Hunt (506), Dunlop, nor Hunt (830) states the bonding strength between the target and the backing plate. However, as the combined invention includes an aluminum target with a maximum grain size between 50 μ ms and 100 μ ms diffusion bonded to a backing material of 6061 aluminum, the invention embodies the physical

parameters of having bond strength of at least 5000 psi, from about 8000 psi to about 10,000 psi.

Response to Arguments

Applicant's arguments and inventor's affidavit filed 15 August 2003 have been fully considered, however as the USPTO requires in patent prosecution for the examiner to perform a new search. In discovery, the examiner found the Dunlop reference that teaches approximately one-micron grain size for an aluminum sputter target. Examiner reasonably believes that even with diffusion bonding of Dunlop's sputter target, the maximum size of the Al grains would remain below 100 μ ms and even below about 50 μ ms.

As always, the examiner's public service duty is to provide patent protection to novel applications. Examiner will consider new evidence or interviews deemed necessary by the applicants.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William M. Brewster whose telephone number is 703-305-5906. The examiner can normally be reached on Full Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3432 for regular communications and 703-305-3432 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

William M. Brewster

WB

29 August 2003